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Digenetic Trematodes from Marine Fishes of the Yaeyama Islands

I. Family Waretrematidae

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Under the Natural History Research Project of the Japanese Islands by the National Science Museum, Tokyo, a survey was made on the parasites of marine fishes of the Yaeyama Islands, the most southwestern islands in the Ryukyus, in February and March, 1973. Fishes for study were obtained mainly by commercial stationary net and drive-in net. Trematodes were fixed in acetic sublimate under slight cover glass pressure, stained with Heidenhain's hematoxylin and mounted in balsam. The present report deals with a new digenetic trematode, *Pseudomegasolena ishigakiensis* n. g., n. sp., belonging to the family Waretrematidae. The specimens are deposited in the collection of the National Science Museum, Tokyo.

The authors wish to express their sincere gratitude to the members of Ishigaki-shi Fishermen's Co-operative Association, Okinawa Prefecture, for providing them facilities to collect the parasites, and to Dr. T. ABE, Tokai Regional Fisheries Laboratory, Tokyo, for identifying the host fish. Thanks are also due to Dr. S. KAMEGAI, Meguro Parasitological Museum, Tokyo, who allowed them to examine the paratypes of *Metamegasolena scarideae* in the Yamaguti Collection.

Family Waretrematidae SRIVASTAVA, 1973

Subfamily Megasoleninae MANTER, 1935

Pseudomegasolena ishigakiensis n. g., n. sp.

(Figs. 1-3)

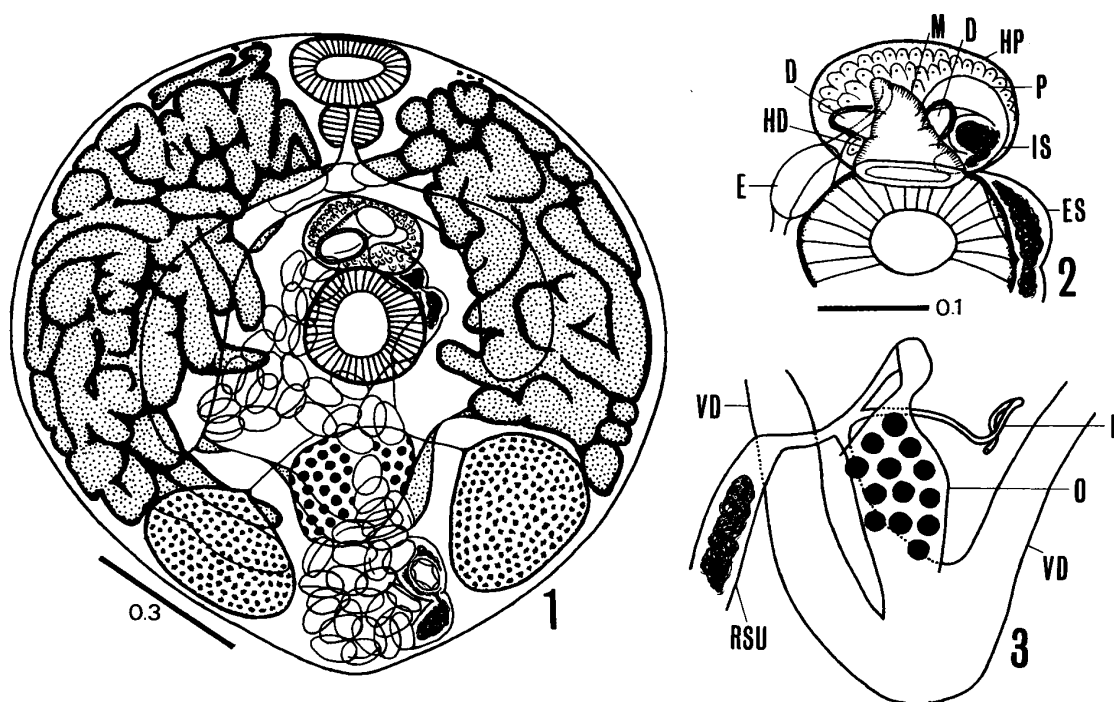
Host. *Scarus venosus* CUVIER et VALENCIENNES.

Habitat. Small intestine.

Locality. Ishigaki-jima Island, Okinawa Prefecture, Japan.

Specimen No. NSMT-P1-1315.

Description. Body oval, 0.95–1.63 mm long and 0.95–1.35 mm wide. Cuticle thin, armed with minute spines except for posterior part of body. Scattered eyespots present. Oral sucker subterminal, round, $0.102\text{--}0.179 \times 0.173\text{--}0.265$ mm; prepharynx inconspicuous, without postoral muscle ring; pharynx globular, $0.082\text{--}0.112 \times 0.102\text{--}0.158$ mm; esophagus short, up to 0.13 mm long, without muscle element, bifurcating near equator of forebody; caeca wide, terminating at anterior end of posterior third of body. Acetabulum round, $0.194\text{--}0.255 \times 0.189\text{--}0.311$ mm, at equator of body.



Figs. 1–3. *Pseudomegasolena ishigakiensis* n. g., n. sp. — 1. Entire worm, ventral view. — 2. Terminal genitalia, ventral view. — 3. Ovarian complex, ventral view. D, diverticulum; E, egg; ES, external seminal vesicle; HD, hermaphroditic duct; HP, hermaphroditic pouch; IS, internal seminal vesicle; L, Laurer's canal; M, metraterm; O, ovary; P, pars prostatica; RSU, receptaculum seminis uterinum; VD, vitelline duct. Scales in mm.

Sucker ratio 1:0.94–1.18. Testes oval to elliptical, $0.235\text{--}0.750 \times 0.112\text{--}0.400$ mm, separated from each other, symmetrical at lateral side of posterior third of body or near posterior extremity of body. Each vas efferens running into external seminal vesicle at posterior site of acetabulum. External seminal vesicle tubular, lying along left margin of acetabulum. Hermaphroditic pouch oval, $0.143\text{--}0.265 \times 0.194\text{--}0.306$ mm, between caecal bifurcation and acetabulum. Internal seminal vesicle convoluted; tubular pars prostatica $0.004\text{--}0.006$ mm long, surrounded by prostatic cells; ejaculatory duct rudimentary, joining metraterm to form stout hermaphroditic duct which is continuous directly of metraterm and provided at proximal end with paired conical diverticula. Diverticula almost symmetrical, $0.004\text{--}0.005$ mm long and

surrounded by muscle fibers. Metraterm and hermaphroditic duct lined with cilia except for diverticula. Hermaphroditic duct opening into very shallow but wide genital atrium. Genital pore wide, median, just anterior to acetabulum. Ovary ovoid, $0.173\text{--}0.281 \times 0.128\text{--}0.258$ mm, intertesticular, at some distance posterior to acetabulum. Oviduct arising from anterior part of ovary, giving off Laurer's canal and then receiving vitelline duct to lead into receptaculum seminis uterinum. Laurer's canal opening dorsally sinistral to ovary. Seminal receptacle absent. Uterus running longitudinally, first descending to posterior extremity of body, ascending along right margin of acetabulum and entering into hermaphroditic pouch to form short muscular, finely ciliated metraterm. Uterine eggs large, oval, embryonated, $0.082\text{--}0.093 \times 0.049\text{--}0.062$ mm. Vitellaria consisting of irregularly ramified acini, from level of oral sucker to equator of hindbody, surrounding caeca on every side. Excretory vesicle saccular, reaching posterior end of ovary, where paired collecting vessels are given off. Excretory pore terminal. Lymph vessels are seen near posterior extremity of body, but their number and course could not be determined from mounted specimens.

Discussion. According to YAMAGUTI (1971), the subfamily Megasoleninae of the family Waretrematidae contains five genera, *Megasolena* LINTON, 1910, *Hapladena* LINTON, 1910, *Metamegasolena* YAMAGUTI, 1970, *Spiritestis* NAGATY, 1948, and *Vitellibaculum* MONTGOMERY, 1957. Of these, the present genus resembles *Megasolena*, *Metamegasolena* and *Vitellibaculum* in having two testes. However, it differs from any of them in the body taking an oval-shape, in the testes lying symmetrically and being separated from each other, in the uterus running longitudinally and reaching the posterior extremity of the body, in the vitellaria ranging from the level of oral sucker to the equator of hindbody, and in the hermaphroditic duct having peculiar shaped with paired cone-like diverticula.

In addition, YAMAGUTI (1970) mentioned in the description of *Metamegasolena scarideae* that "testes contiguous, tandem, more or less diagonal", but the re-examination of three paratypes (MPM Coll. Nos. 15153 and 15154) showed that different individuals have different arrangement of testes, that is, the testes lie close to each other tandem, diagonally and symmetrically.

***Pseudomegasolena* n. g.**

Waretrematidae, Megasoleninae. Body oval, spinose. Eyespots present. Oral sucker round; prepharynx inconspicuous, without postoral muscle ring; pharynx globular; esophagus short, without muscle element; caeca wide, terminating at anterior end of posterior third of body. Acetabulum round, as large as oral sucker, at equator of body. Testes oval to elliptical, separated from each other, symmetrical in posterior third of body. External seminal vesicle present. Hermaphroditic pouch oval, between caecal bifurcation and acetabulum, containing convoluted internal seminal vesicle, pars prostatica with prostatic cells, rudimentary ejaculatory duct,

short metraterm and hermaphroditic duct. Hermaphroditic duct stout, with paired conical diverticula at proximal end, opening into shallow wide genital atrium. Genital pore just anterior to acetabulum. Ovary ovoid, intertesticular. No seminal receptacle. Laurer's canal present. Receptaculum seminis uterinum present. Uterus running longitudinally, reaching posterior extremity of body. Vitellaria consisting of ramified acini, ranging from level of oral sucker to equator of hindbody. Excretory vesicle saccular, with terminal pore. Lymph vessels present. Intestinal parasites of marine teleosts.

Type-species: *Pseudomegasolena ishigakiensis* n. sp.

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